

Amendments to the Claims

Claims 1-14 (Canceled)

15. (New) A procedure for the simultaneous, comprehensive assay of unsaturated cyclic and open chain aliphatic molecular structures in a serum sample, comprising:

- (a) simultaneously acylating said structures using a chromogenic reagent in a color reaction to obtain an acylated sample containing analogs of said structures;
- (b) measuring spectral characteristics of said sample over substantially the entire visible wavelength range to obtain multiplexed spectral data; and
- (c) developing a comprehensive serum lipids profile discriminating among serum cholesterol and at least one of the group consisting of free unsaturated long chain fatty acids (LCFA's), saturated and unsaturated cholesteryl-LCFA esters, and LCFA's in the form of triglycerides and phospholipids, by comparing said multiplexed spectral data with characteristics representative of known concentrations of said analogs.

16. (New) The procedure of claim 15, further comprising:

- (d) comparing said profile to a library of data representative of normal and abnormal values to diagnose or evaluate risk factors for disease.

17. (New) The procedure of claim 16, wherein step (d) includes:  
comparing said profile to data representative of Type I, IIa, IIb, III, IV and V dyslipidemias.
18. (New) The procedure of claim 16, wherein the disease is diabetes.
19. (New) The procedure of claim 16, wherein the disease is coronary artery disease.
20. (New) The procedure of claim 15, wherein step (b) includes:  
measuring the relative absorbance intensity of each analog in the acylated sample.
21. (New) The procedure of claim 15, wherein step (b) includes:  
measuring the relative fluorescence of each analog in the acylated sample.
22. (New) The procedure of claim 15, wherein step (b) includes:  
measuring the spectral characteristics using circular dichroism.
23. (New) The procedure of claim 15, wherein step (c) includes:  
discriminating among chylomicron, VLDL, IDL, LDL and HDL lipoprotein fractions and subfractions.

24. (New) The procedure of claim 15, wherein step (a) further comprises the substep of:

(a)(1) after a predetermined time, eliminating further progress of said color reaction.

25. (New) The procedure of claim 24, wherein step (a)(1) includes:

adding at a predetermined time an amount of glacial acetic acid sufficient to stop said color reaction.

26. (New) The procedure of claim 15, wherein step (b) further comprises the substep of:

(b)(1) repeating step (b) at short time intervals after step (a) up to and including the end point of the color reaction in order to produce kinetic spectral data.

27. (New) The procedure of claim 15, wherein said chromogenic reagent is selected from the group consisting of acetyl chloride, acetic anhydride and glacial acetic acid and said color reaction is catalyzed by the addition of an acid selected from the group consisting of perchloric acid, zinc perchlorate hexahydrate, concentrated sulfuric acid, methanesulfonic acid and zinc organic acid salts.

28. (New) The procedure of claim 27, wherein said chromogenic reagent is acetyl chloride and said color reaction is catalyzed by the addition of a 70% perchloric acid solution.

29. (New) The procedure of claim 27, wherein said chromogenic reagent is acetyl chloride and said color reaction is catalyzed by the addition of a zinc perchlorate hexahydrate.